

### REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 18-28 are currently pending in this application, Claims 18, 25, and 26 having been amended. The changes and additions to the claims do not add new matter and are supported by the originally filed specification, for example, on page 14, line 6; and page 15, lines 14-19; page 15, line 19, page 17, line 24, and page 20, line 23.

In the outstanding Office Action, Claims 18-28 were rejected under 35 U.S.C. §102(a) as being anticipated by Keller et al. (Vehicular Technology, IEEE Transactions on, Vol. 49, Issue 5, September 2000, pages 1893-1906, hereafter "Keller").

With respect to the rejection of Claim 18 under 35 U.S.C. §102(a), Applicants respectfully submit that the clarifying amendment to Claim 18 overcomes this ground of rejection. Amended Claim 18 recites, *inter alia*,

precalculating a plurality of combinations x, y, and z defining x subcarriers for modulation with a lower modulation scheme, y subcarriers for modulation with a standard modulation scheme, and z subcarriers for modulation with a higher modulation scheme (x, y, and z are integer numbers); wherein the sum of x, y, and z is n and a resulting number of coded bits of a multicarrier symbol is constant;

selecting one of the combinations for said multicarrier transmission in order to fix the integer numbers x, y, and z during said multicarrier transmission; and

modulating the x subcarriers having low fading channel profile information with the lower modulation scheme, modulating the y subcarriers having medium fading channel profile information with the standard modulation scheme, and modulating the z subcarriers having high fading channel profile information with the higher modulation scheme.

Therefore, Claim 18 defines that a combination  $x$ ,  $y$ , and  $z$  is selected for multicarrier transmission in order to fix the numbers  $x$ ,  $y$ , and  $z$ . Then, in another step, the adaptive modulation process is performed on the basis of individual “low,” “medium,” or “high” fading channel information of each subcarrier. Thus, in Claim 18, the fading channel information is used during the adaptation process, but not for the determination of the combination  $x$ ,  $y$ , and  $z$ . On the contrary, the numbers  $x$ ,  $y$ , and  $z$  are chosen independently of the individual subcarrier channel fading. Claim 18 also defines that the particular combination  $x$ ,  $y$ , and  $z$  is selected and fixed (i.e., maintained constant) during the multicarrier transmission.

Keller is directed to an adaptive modulation method for duplex OFDM transmission. Keller teaches using  $N$  subcarriers and evaluating a channel transfer function for each subcarrier, and choosing a modulation scheme according to the resulting signal-to-noise ratio (SNR) for multicarrier transmission (see Section II.A and Section II.D). Each subcarrier is modulated with the corresponding stored modulation scheme. Keller describes that “the modulation scheme  $M_n$  is selected ***if the instantaneous channel SNR exceeds the switching level  $l_n$*** ” (See Section II.D (1)). Thus, in Keller the system performs a new modulation adaptation where, depending on the SNR values, the number of subcarriers that should be modulated with a low, a standard, or a high modulation scheme will vary.

The Office Action takes the position that the number of subcarriers (to be modulated with a given scheme) is fixed “***at least until there is another determination of the channel characteristics.***” The fixing of this particular number of subcarrier being done in that the channel characteristics are determined and in that the modulation scheme for each subband/subcarrier is selected according to said channel characteristics. (See Office Action, at page 2).

Therefore, the examiner acknowledges that the number of subcarriers to be modulated with a given scheme is not fixed before the adaptation process *and is not fixed independently of the channel fading*. The examiner appears to be stating that the number could only be observed passively after the adaptation process has been fulfilled, and Applicants submit that this would not be independent of the individual subcarrier channel fading.

Thus, in Keller, the number of subcarriers with a given modulation is fixed until the next channel detection. In contrast, Claim 18 defines fixing the number x, y, and z and selecting a combination x, y, and z for the duration of the multicarrier transmission.

Therefore, Applicants respectfully submit that Keller fails to disclose or suggest “precalculating a plurality of combinations x, y, and z defining x subcarriers for modulation with a lower modulation scheme, y subcarriers for modulation with a standard modulation scheme, and z subcarriers for modulation with a higher modulation scheme (x, y, and z are integer numbers); wherein the sum of x, y, and z is n and a resulting number of coded bits of a multicarrier symbol is constant,” and “selecting one of the combinations for said multicarrier transmission in order to fix the integer numbers x, y, and z during said multicarrier transmission,” as defined by amended Claim 18.

**M.P.E.P. §2131 requires for anticipation that each and every feature of the claimed invention must be shown and requires for anticipation that the identical invention must be shown in as complete detail as contained in the claim.**

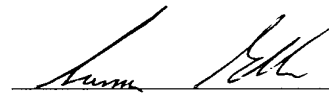
For the reasons discussed above, Applicants submit that Keller fails to disclose each and every feature of Claim 18 in as complete detail as contained in the claim. Therefore, Applicants respectfully submit that amended Claim 18 (and all associated dependent claims) patentably distinguishes over Keller.

Amended independent Claims 25 and 26 recite features similar to those of amended Claim 18 discussed above. Therefore, Applicants respectfully submit that Claims 25 and 26 (and all associated dependent claims) patentably distinguish over Keller.

Consequently, in light of the above discussion and in view of the present amendment, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



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Bradley D. Lytle  
Attorney of Record  
Registration No. 40,073

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 03/06)

Sameer Gokhale  
Registration No. 62,618